Urology Guidelines for GPs

These notes have been compiled for use in General Practice, but might also be of use to others who have patients under care with coincidental Urological problems. Correspondence to: edu@bui.ac.uk

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URINARY TRACT STONES

RENAL COLIC
ANALGESIA
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SCREENING INVESTIGATIONS
TREATMENT OPTIONS FOR ALL URINARY TRACT STONES

RENAL COLIC

Suspected Renal Colic - Advice Summary

- **We will see and admit if necessary any acute case of renal colic.**
- **Alternatively, if home management is decided upon:**
- **Analgesia : Pethidine I.M. or Diclofenac oral or suppository (see contraindications)**
- **MSU**
- **IVU within 24 hours if possible**
- **Refer urgently by telephone if obstructed or by letter if not obstructed but**

- **stone fails to pass.**
- **Refer urgently by telephone any patient with persistent pain, fever or loin**
- **tenderness.**

Patients with urinary tract stones commonly present with renal colic and the majority will pass the stone spontaneously. This depends on the size and the position of the stone, but most causing colic are under 5 mm in diameter.
Patients presenting with apparent renal colic need confirmation of the diagnosis.

MSU for haematuria and culture.

Plain X-ray (KUB) followed by IVU as soon as possible, even if a stone has
passed (there may be more and signs of obstruction may show).

If you are managing the patient at home, persistent pain after 24 hours, loin tenderness or fever indicate the need for urgent referral.

ANALGESIA

The patient with renal colic requires urgent analgesia. The traditional treatment for the pain has been Pethidine 100 mg by intramuscular injection. Oral Pethidine tablets are not usually adequate but Diclofenac 75 mg orally, or as a 100 mg suppository, can be a useful alternative. Note, however, that renal failure has been associated with the use of this drug. Those particularly at risk are patients with underlying renal disease, cirrhosis, congestive heart failure, the elderly, those taking diuretics and those with significant cardio vascular disease. It is contraindicated in patients with asthma and those taking ACE inhibitors.
Our recommendation, therefore, is to confine the use of Diclofenac to fit patients, under 55 years of age who are not on diuretics and to prescribe no more than 5 doses without further investigation.

INTRAVENOUS UROGRAM

If you have managed to arrange X-rays, the urologist needs to see the films (not just a report) with the patient, if referred. Some hospitals are slow to part with films, so, to avoid unnecessary repeat X-rays, it is most helpful to arrange them at the same hospital where the patient is likely to attend if a consultation seems indicated.

SCREENING INVESTIGATIONS

The stone should always be sent for chemical analysis if possible; the majority contain calcium oxalate, but it is important to identify

the uric acid or cystine stones because medical treatment is available (and they do not show on plain X-rays). Please remember to tell the patient to pass urine into a receptacle.
The outline screening tests should include the following laboratory investigations :-
MSU, full blood picture, urea, creatinine, sodium, potassium, chloride, bicarbonate, uric acid, calcium and phosphate.

TREATMENT OPTIONS
For stones that do not pass spontaneously.
There are four methods of managing upper urinary tract stones, either alone or in combination.

1. Extracorporeal Shock Wave Lithotripsy (ESWL)
2. Percutaneous Nephrolithotomy (PCNL)
3. Ureteroscopy
4. Open Surgery

ESWL
The Lithotriptor at Southmead is a second generation machine which can shatter most renal and ureteric stones, but, more than one treatment may be required. Most patients can be treated without admission under mild sedoanalgesia. The fragments pass out in the urine, usually with minimal discomfort, although there may be transient haematuria and some patients experience slight skin bruising where the shock wave enters. About 15% of patients experience renal colic, half of whom may need readmission if the ureter is obstructed. If a renal stone is more than 2 cm in diameter a ureteric stent is placed to prevent stone debris causing obstruction. Stents are also used as a preliminary in some patients whose upper ureters are initially obstructed by stone. These stents should be removed within 6 weeks of insertion (stone formers can form stones on them).

PCNL
Percutaneous renal surgery is performed to remove some renal stones if they fail to fragment with ESWL or to debulk the very large ones. It usually entails hospitalisation for a period of 4 - 8 days.

URETEROSCOPY
The new generation of ureteroscopes are of a fine diameter which has greatly facilitated
their passage up a ureter. Ureteric stones can be visualised and removed with a basket or fragmented using lithotriptor probes.

OPEN SURGERY
There is still a place for the classical operative approach for stones, but the indications are now becoming rare.

BLADDER STONES
May be associated with bladder outlet obstruction.
Particularly vulnerable group - immobile patients with long-term indwelling catheters. Those with persistent irritable bladder symptoms need a KUB X-ray.
Treatment - Endoscopic (a few need open surgery).
AFTER CARE/STONE PREVENTION (apart from specific treatment of underlying causes).
"Keep the urine dilute, ie., avoid producing deep coloured urine throughout the 24 hours, even if you have to get up once at night to empty your bladder."
Reduction of dietary calcium was thought to be helpful in preventing stones but excess of calcium in the gut combines with oxalate and is not absorbed. If calcium intake is reduced, more oxalate is absorbed and the resulting hyperoxaluria (particularly during the night hours) carries a greater risk of stone formation and hypercalciuria.

ADULT URINARY TRACT INFECTIONS

URINE MICROSCOPY & CULTURE
URINE CYTOLOGY
IMAGING
BRIEF NOTES ON PARTICULAR CASES

Advice Summary

- Although urinary tract infections are common in women, they are not commonly associated with significant underlying pathology, so investigation can be selective depending on severity of infection, the types of organisms cultured, persistence or recurrence, as well as localising symptoms and signs.
- Males with U.T.I. are much more likely to have underlying pathology and should be investigated
- After history and examination all the initial investigations can be accomplished on or by arrangement by the practice.
- The first priority is to confirm the infection.

MSU
For microscopy and culture obtained before antibiotic treatment - the most important but sometimes the most inconvenient to arrange from the Practice. The specimen must be a clean catch (or catheter specimen if there is difficulty in females) * and must be fresh on arrival at the laboratory (or refrigerated, overnight at most, until it can be delivered). The Lab may indicate a suspicion of

contamination, rather than true infection on a report if there are a few cells or the organisms are of doubtful significance. The commonest organism cultured is E.Coli, other organisms are more likely to be associated with an underlying urinary tract abnormality, hospital acquired infection or an indwelling catheter.
A further MSU one week after treatment is also important.
Persistent, rather than recurrent, infection is common with the presence of urinary tract abnormalities and is not always symptomatic.
We would not recommend routine use of broad spectrum antibiotics unless indicated by M.S.U. culture.

URINE CYTOLOGY In cases with associated haematuria.
Cytology may be difficult to interpret until the infection is eliminated (as it is the presence of urinary calculi or irradiation cystitis). Persistent cystitis symptoms with microscopic haematuria, in spite of adequate treatment for any infection present (refer early), may indicate chronic interstitial cystitis or transitional carcinoma in situ ("Malignant Cystitis" - cytology usually malignant).

ULTRASOUND OF THE URINARY TRACT AND KUB X-RAY
The combination of these two non-intrusive investigations shows up many abnormalities, including many in the renal parenchyma, hydronephrosis, most stones, residual bladder urine after voiding etc. If they are normal in the absence of haematuria or loin pain, then IVU and other imaging techniques are rarely indicated.
FBC, UREA & CREATININE (on suspicion of reduced renal function)
* See Para 5 - Section on Incontinence

BRIEF NOTES ON PARTICULAR CASES

Asymptomatic bacteriuria - all need investigation (although this is limited in pregnancy when treatment to avoid the common sequel of pyelonephritis is necessary - refer to Antenatal Clinic if need be.
Sterile pyuria - (not presenting as urethritis) - think of TB and other organisms failing to culture on normal media as well as interstitial cystitis.
"Prostatitis" - covers a number of syndromes characterised by varying degrees of perineal and pelvic pain, malaise, painful voiding of urine, poor stream and frequency. Infection with common entero-bacteria as for UTIs is easily demonstrated in some whilst in others the cause is obscure and treatment difficult. Symptoms are not always clearly defined, so microbiological findings are all important as a guide to classification and management.
In all cases before treatment starts, and as far as the patient in pain will allow, the following should be obtained - MSU, expressed

prostatic secretions (EPS) from urethra or initial urine after prostatic massage.

Acute bacterial prostatitis - MSU and EPS (if obtained) both cultures positive. (Blood cultures may also be positive).
Can be a very severe illness with occasional septicaemia, prostatic abscess and acute retention. Severe cases need prompt admission. All cases need treatment for 6 weeks with an appropriate antibiotic after initial empirical treatment; Trimethoprim is suitable if the organisms are sensitive. Ciprofloxacin is an alternative in resistant cases.

Chronic bacterial prostatitis - MSU culture usually negative. EPS leucocytosis, culture usually positive.
Six week treatment as above. Relapse needs further investigation followed by more prolonged use of antibiotic or prostatic resection (especially if prostatic calculi are present).

"Non-bacterial" prostatitis - MSU "sterile" on normal media. Therefore, some cases infected with a range of fastidious organisms have been misfiled under this heading. Chlamydia and urea plasma have been implicated, for example, although few respond to Tetracycline treatment. Gonorrhoea and TB can also be missed if not specifically looked for - microbiological help needed at the outset and referral to STD Clinic, if appropriate. Some with completely negative findings, apart from EPS leucocytosis, may benefit from prostatic resection. The possible role of viruses has not been defined.

Prostadynia - MSU no significant cells and sterile on culture. Sexual dysfunction may be an additional symptom to those listed above. Careful investigation of bladder outlet function and psychological factors needed with treatment according to the findings.

THE PAINFUL SCROTUM

Epididymitis - Six weeks antibiotic treatment recommended. If it does not show signs of progressive resolution, think of Chlamydia and TB (but do not necessarily expect to find organisms in the urine).

Testicular tumour - also a possibility. Refer for ultrasound and consultation. Also, please let us know if you have patients with post-operative epididymitis (TURs etc).

Sperm granuloma - after vasectomy can masquerade as chronic epididymitis. Ultrasound and refer.

Acute orchitis - Mostly virus infection (usually mumps). Mumps orchitis occurs only after puberty and most are unilateral. Testicular atrophy may follow - advise referral and ultrasound (steroids rather than testicular decompression may reduce the chance of atrophy).

Note on testicular torsion - included here because differentiation from epididymitis and orchitis is not always easy, especially when the patient presents a little while after the event when local signs appear inflammatory. History is important and previous episodes of sudden pain with rapid resolution are not are not uncommon in testicular torsion. It can occur at any age, although 10 - 20 years is the commonest. It may also occur at any time including during sleep. If there is a possibility of torsion, send the patient to the nearest A & E Department by any means immediately and 'phone the urology or General Surgical Firm on take at the same time. Torsion of the appendix testis (may be a visible/palpable bluish lump at the upper pole in the early stages) - same applies, we explore them immediately.

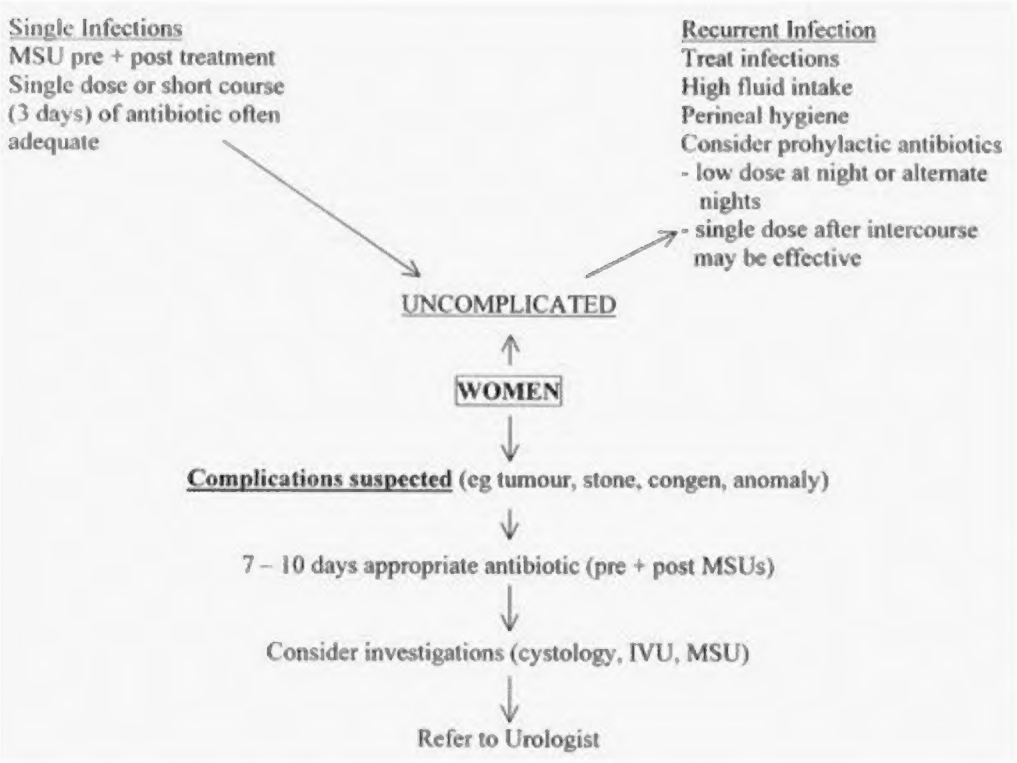
Longterm indwelling catheter users and those with urinary diversions - will all have organisms in the urine. Treat only if patient has symptoms.

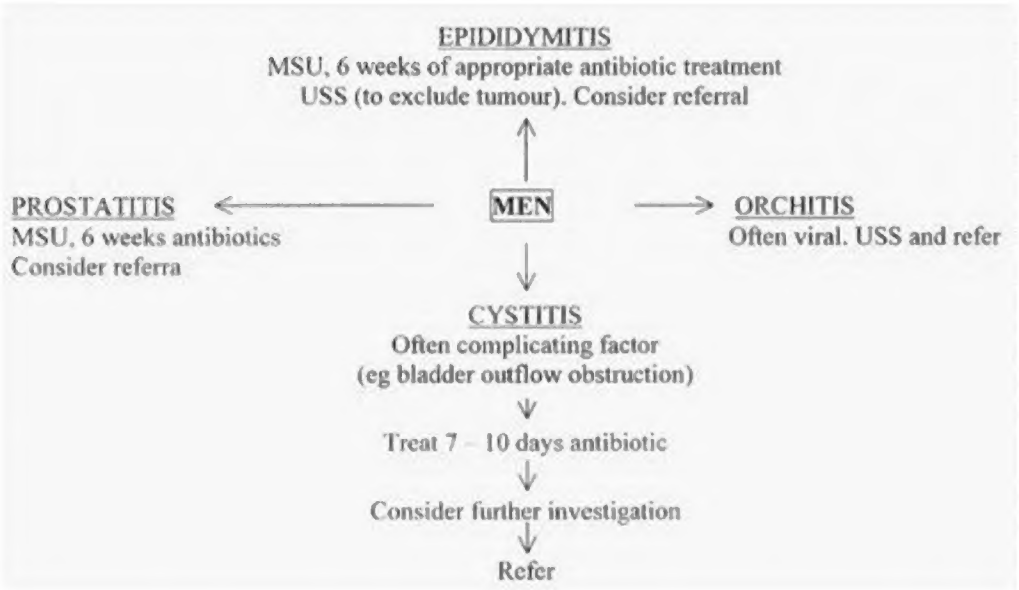
Recurrent proven infection with bladder outlet obstruction. These patients usually require active treatment such as TURP or a urethral dilatation in an elderly woman. Should urinary infections persist despite eliminating residual urine as a possible cause, then it may be necessary to institute longterm low dose antibiotics. Experience has shown that it is best to rotate these low dose antibiotics, such as Ampicillin, Nitrofurantoin and Trimethoprim, on a monthly basis. If there is a persistent residual urine, and the outflow tract resistance has been lowered as far as possible, then intermittent self-catheterisation is a very effective way of ensuring the abolition of the residual urine and effective control of the symptoms.

Urethral syndrome. The symptoms of cystitis without MSU abnormalities in sexually active women is relatively common and often termed "urethral syndrome." A frequency volume chart will provide one objective measure of the symptoms. General advice, such as the self-help advice offered by Angela Kilmartin's book "Understanding Cystitis" (available from most booksellers), should be the first line of management. Patients with persistent symptoms may be referred for consideration of cystoscopy and urethral dilatation which helps up to 40% of women.

Frequently recurrent cystitis in younger women with otherwise negative investigations. We recommend long term (six months or more) low dose antibiotic. In post menopausal women, not on HRT, check also for vaginitis which may respond to topical oestrogen cream application (without an applicator).

THE MANAGEMENT OF URINARY TRACT INFECTIONS IN ADULTS


Single Infections
MSU pre + post treatment
Single dose or short course
(3 days) of antibiotic often
adequate
Recurrent Infection
Treat infections
High fluid intake
Perineal hygiene
Consider prohylactic antibiotics
- low dose at night or alternate nights
- single dose after intercourse may be effective
UNCOMPLICATED
WOMEN
Complications suspected (eg tumour, stone, congen, anomaly)
7 – 10 days appropriate antibiotic (pre + post MSUs)
Consider investigations (cystology, IVU, MSU)
Refer to Urologist



URINARY INCONTINENCE

FREQUENCY AND VOLUME CHART
MID-STREAM OR CATHETER SPECIMEN OF URINE (CLEAN CATCH)
PLAIN URINARY TRACT X-RAY (KUB)OR ULTRASOUND SCAN
CONTINENCE ADVISORY SERVICE
BLADDER TRAINING
CATHETER CARE

FREQUENCY AND VOLUME CHART

The initial assessment of the patient should include a frequency and volume chart; the patient records the time and the volume of urine passed, together with any episodes of leakage that may occur over a period of 7 days. The number of incontinence pads used per day should also be recorded. During a 24 hour cycle, the normal individual passes urine between 4 and 8 times, with maximum volumes between 300 - 600 ml and a total output of 1200 - 1800 ml.

The frequent passage of small volumes of urine with urinary incontinence suggests either a bladder of small capacity or one that fails to empty completely. Reduced capacity may be due to habit (possibly from fear of incontinence), to hypersensitivity from infection or stones, to an unstable bladder from detrusor overactivity or to a contracted bladder from chronic inflammatory changes or carcinoma.

The bladder that fails to empty completely may be palpable if it is holding more than 300 ml, or it may be demonstrable on a plain X-ray or an ultrasound scan.

Urinary leakage with a normal bladder capacity suggests sphincter weakness as in stress incontinence, but urodynamic investigations may be necessary to confirm this. Urodynamic studies have a vital role in differentiating the various types of incontinence, namely stress, urge, overflow and reflex or neuropathic incontinence.
On the clinical examination, the option of taking a specimen of urine using a fine 12 or 14 FG disposable catheter should be given consideration when examining female patients. Patients handicapped by age, immobility, obesity etc cannot easily provide an MSU without a high risk of contamination and, in such cases, the report of bacteriuria with or without pyuria can be misleading. Examination of the urine is such a routine test, but the path report does need judicious interpretation.

Patients with urinary incontinence and a cystocoele usually require video-urodynamic studies before the correct course of management can be planned. Those with uterine prolapse are usually directed to the gynaecological clinic, but many elderly women have evidence of atrophic vaginitis which responds well to local oestrogen creams. These are best applied digitally rather than through a plastic introducer which can make them sore.

Obese patients should be advised about strict dieting. This is a therapeutic exercise as well as an essential preoperative requisite.

FREQUENCY/ VOLUME CHART - as used at Southmead

Please complete the confidential form as accurately as possible. Please note the time you pass your water and the volume passed. Any measuring jug will do for this purpose. Obviously when you are at work it may be inconvenient to measure the volume; in this case, record only the time. However, at other times please try to record both.

If you wet yourself at any time, record the time and underneath write the letter "W".

Day-time means when you are up; night-time means when you are in bed.

An example is provided below to help you :

DAY	Time/volume(mls) DAY-TIME	NIGHT-TIME	Number of pads used in 24 hour period
1	7am / 200 1pm / -- * 6pm / 400 11pm / 300 (*at work, couldn't measure volume)	3am / 200 6am W	
2			
3			

NAME _____ Date of Appointment _____

DAY	Time / volume (mls) **DAY-TIME**	**NIGHT-TIME**	Number of pads used in 24 hour period
1			
2			

3			
4			
5			
6			
7			

AVERAGE DAILY FLUID INTAKE (in cups) =

_____

AN ALTERNATIVE FREQUENCY VOLUME CHART

1. Each time you empty your bladder measure the volume in mls (millilitres) and write it in one of the hourly boxes (there is room to write several volumes in each box if necessary). You do not need to write the exact times. If you leak urine, write a W in the box.
2. Please mark the time you **go to bed** each night and **get up** for the day with a line across the space.
3. Record for ONE WEEK prior to your appointment.
4. Your chart that you bring to the clinic should look similar to the one illustrated below. It has a day filled in as an example.
5. You do not need to write down drinks unless the doctor has requested this.

FREQUENCY VOLUME CHART

Day	8 to 9:00 am	9 to 10:00	10 to 11:00	11 to 12:00	12 to 1:00 pm	1 to 2:00	2 to 3:00	3 to 4:00	4 to 5:00	5 to 6:00	6 to 7:00	7 to 8:00	8 to 9:00	9 to 10:00	10 to 11:00	11 to 12:00	12 to 1:00 am	1 to 2:00	2 to 3:00	3 to 4:00	4 to 5:00	5 to 6:00	6 to 7:00	7 to 8:00
1	GOT UP		100 50		300		75 W			200		100		250 150	BED		150					250		
2																								
3																								
4																								
5																								
6																								
7																								

ADDRESSOGRAPH

CURRENT MEDICATION
Please list any drugs you take.

Enter the measured amounts in millilitres (ml) in time spaces every time you pass urine, and mark the time you go to bed each night and get up each morning with a line across the space.
Record for ONE WEEK prior to your appointment.
Please fill in as per instructions and bring it with you to your outpatients appointment. **PTO for Example.**

POST-MICTURITION DRIBBLING OF URINE

This is a common problem that causes distress to males of all age groups, thought to be related to a failure of the bulbo-spongiosum muscle to contract and thus empty the distal urethra. It does not indicate a prostatic disorder and does not, by itself, require referral. Some patients can be helped simply by showing them how to compress the bulb of the urethra in the perineum after voiding.

PLAIN URINARY TRACT X-RAY OR ULTRASOUND EXAMINATION

A plain X-ray should be performed to exclude bladder stones; if taken after micturition the film also provides a rough estimate of the volume of residual urine from the size of the soft tissue bladder shadow. An ultrasound scan can give a quantitative estimate of the residual volume of urine and an accurate, non-invasive display of urinary tract anatomy but, compared to the Intravenous Urogram, it fails to provide any indication of renal function.

CONTINENCE ADVISORY SERVICE

Patients may be referred to this service or, in some Health Authorities, patients may refer themselves for advice on the practical management of their incontinence. The Continence Advisor will assess the patient either at home or hospital, and prepare a report covering the social and physical aspects of the problem. A wide range of appliances are available and it is important to select the most appropriate and economic type. Some patients prefer to discuss this problem with a well-informed nurse.

A CLINICAL TRIAL OF BLADDER TRAINING

Patients with frequency, urgency and urge incontinence form a large group of regular clinic attenders, and it is well worth introducing a trial of bladder training. The frequency and volume chart often shows that they can hold reasonable volumes of 300 ml urine or more at times, particularly during sleep; those who never hold more than 200 ml should be referred to hospital for further investigations. In the absence of any obvious abnormality on clinical examination and a negative urine culture, it is worth giving the patient a trial of bladder training reinforced with an anticholinergic preparation. The patient should be instructed to pass urine "by the clock", starting with an interval such as every two hours which can be managed without too much difficulty. This interval is gradually increased to two or three hours and the patient should keep a chart one day a week to monitor progress. A mild sedative at night can be useful particularly for those who wake at regular times during sleep to pass urine. An anticholinergic preparation such as Oxybutynin 2.5 mg can be used to support the training regime with 2 - 6 tablets a day; Propantheline bromide or Imipramine are alternative preparations.

If there is no response to such a trial, further investigations should be arranged.

CATHETER CARE

Long-term catheterisation is usually considered to be a "last resort" in the management of patients with loss of normal bladder control, but it should aim to improve their quality of life not to compromise it. Catheters introduce a high morbidity and the occasional mortality. All patients with long-term catheters will develop a chronic bacteriuria; infection arises at the rate of about 5 - 10% per day. Within 48 hours of introducing a catheter, a biofilm forms on the surface of the catheter as a fine fibrillar network from deposition of fibrin, desquamated urothelial cells and bacteria. The bacteria produce a glycocalyx from long chain polysaccharides which cause then to adhere to the surface of the catheter and these sessile bacteria are protected within the glycocalyx from the effect of antibiotics in contrast to the floating or planktonic bacteria in the urine. Antibiotics have a very limited place in the treatment of the chronic bacteriuria associated with long-term catheterisation; they are indicated when a patient develops evidence of a systemic infection or when the urine becomes particularly thick, murky or foul-smelling.

The complications of long-term catheterisation include:

- CATHETER BLOCKAGE
- BYPASSING OR LEAKAGE AROUND THE CATHETER
- CATHETER EXTRUSION
- STONE FORMATION
- INFECTIONS:
    - Epididymitis
    - Periurethral abscess
    - Septicaemia

The choice between a urethral or suprapubic catheter needs to be discussed with the patient. An important factor that influences this decision is whether or not the patient is sexually active; this subject must be addressed when considering long-term catheterisation for a disabled person.

Catheter Choice

Start with a small diameter catheter and inject only about 7 - 10mls into the balloon. Regarding the choice of material, the following is intended as a guide.

- PVC - for short term (7 - 19 days only)
- Teflon coated - 4 weeks
- Silicone - 12 weeks

- "Hydrogel" coated - 12 weeks
- Females - catheter length 22 cm / FG 12 - 16 / 7 - 10 ml of water in the balloon.
- Males - catheter length 34 cm / FG 14 - 18 / 7 - 10 ml of water in the balloon.

Store catheters in a cool, dry, dark environment; they tend to perish too rapidly!

Patients should be urged to maintain a high fluid intake at all times and to note the colour of the urine. This provides a useful indication of its concentration, and the aim is to keep it as pale as possible. If the patient is already taking a diuretic preparation, it can be helpful to take this at night when the urine output is normally reduced. It is advisable to make sure that the patient has a spare catheter of the correct size at home together with a catheter pack, local anaesthetic / lubricant etc, in the event of the catheter falling out from deflation of the balloon.

Catheter Removal

Some catheters can be extremely difficult to remove because occasionally the balloon fails to deflate. Suction on the syringe to withdraw fluid from the catheter balloon may cause the catheter walls to collapse. Avoid cutting the catheter tubing but consider injecting 2ml of additional water or air into the balloon, as this sometimes dislodges any debris obstructing the channel. If this simple manoeuvre fails, refer the patient to the urological department at the hospital. The balloon can be deflated by puncturing it with a needle under radiological control.

Catheter Blockage

Patients with long-term catheters can be placed in two groups, namely those who block their catheters and those who do not. The reason for the high propensity of some patients to block their catheters is not understood. The "life" of a catheter varies from one patient to the next and can vary from two weeks to four months; each patient needs to be assessed individually regarding the frequency of catheter change. It is not justified to use an expensive silicone catheter if the catheter needs to be changed every 2 - 4 weeks.

When a catheter blocks, it should be removed and replaced by a new one, but a note should be made whether the catheter is heavily encrusted with debris or not. If the catheter becomes blocked at frequent intervals, consider the following points :

1. Has the patient developed bladder stones? A plain X-ray film (KUB) of the urinary tract should be performed to check

whether there are any radio-opaque stones. If there is no evidence of stones, excessive debris may be a cause and a cystoscopy should be performed to clear this.

2. Make sure that there is free drainage from the catheter. The catheter or the tubing can become kinked, especially if inappropriate clothing is worn. Overweight female patients can occlude a urethral catheter.
3. Is the patient constipated? An impacted sigmoid colon or rectum can give rise to bladder spasms which obstruct free drainage of urine. An enema can be a very useful therapeutic measure under these circumstances.
4. If the catheter is heavily encrusted, send a urine specimen for culture and prescribe an appropriate antibiotic after changing the catheter. The culture willusually produce a heterogeneous growth of organisms.
5. Consider giving a course of allopurinol 100 mg tds to reduce the excretion of urates and calcium phosphates. Acidifying the urine with Ascorbic Acid Gm 1 tds is another measure to consider which might reduce the phosphatic debris in the bladder.
6. Bladder washouts are not recommended because they cause shedding of the urothelial cells. However, if the catheter is blocking frequently, regular washouts twice a week, or occasionally more often, are worthy of a trial. Urotainer Chlorhexidine, Suby-G or Saline may be used.

Bypassing or leakage around the catheter : Extrusion of the catheter

Bypassing of urine around and spontaneous extrusion of the catheter is commonly experienced in patients, particularly women, with neurological conditions such as Multiple Sclerosis. It is tempting to insert a catheter with a larger balloon, but this should be resisted because it does not prevent the problem and can cause even greater damage to the urethra. Anticholinergic preparations may be of benefit in these cases, and it is worthwhile trying a course of Propantheline Bromide or Oxybutynin. If the problem persists, a suprapubic catheter with or without urethral closure should be considered.

Patients with suprapubic catheters, or their carers should be advised how to replace the catheter as soon as possible if it should fall out of the bladder inadvertently, because the tract can close rapidly within 1 - 2 hours.

Stone Formers

Some patients regularly form bladder stones. These tend to be associated with Proteus urinary tract infections or other urease-

producing bacteria which cause the urine to become alkaline. Patients who frequently block their catheters should be suspected of forming bladder stones. If a plain X-ray of the urinary tract fails to reveal any stones, a cystoscopy should be performed to exclude radiolucent debris.

Infections

Patients with long-term catheters are "at risk" of infections because they carry a chronic bacteriuria. The infection can manifest itself in a variety of ways.

Epididymitis is not an uncommon complication of long-term catheterisation. It usually presents as a painful testicular swelling; it is important to continue antibiotic treatment in these cases for a period of at least six weeks to avoid an exacerbation which often follows a shorter course.

Periurethral abscess in male patients can present very serious consequences. Ulceration of the urethra can arise at the peno-scrotal junction, where the penis bends ventrally. The catheter should be strapped to the lower abdominal wall to prevent the urethral angulation at this point.

Septicaemia can present a serious threat to a debilitated patient and may arise after urethral instrumentation or change of catheter. A blood culture and IV antibiotics should be instituted without delay.

Urine Drainage System

A wide range of products are available to attach to the catheter which enable the patient to feel comfortable and secure. Patients do require sympathetic, professional advice when they are first given a long-term indwelling catheter with details about the choices available to them regarding the drainage from the catheter. Whenever possible, they should be given the opportunity to try different products and to select the one they consider to be most appropriate to their needs.

Urine Collection Bags

Care should be taken to select the urine collection bag that is most suitable for the individual patient. Attention should be focused on the type of taps which are available on the bags for emptying and the ease with which they can be operated with one or two hands, avoiding any finger contamination. The actual capacity of the bags varies widely from 350ml to 2,000ml.

The Link System

The link system refers to the linkage between the body-worn bag during the day and the night drainage bag. The purpose of the night bag is to provide undisturbed rest for the user who would otherwise need to empty the leg bag at intervals during the night. The link system is designed to reduce the risks of infection which had accompanied the previous practice of changing over the leg to the overnight urinary drainage system. A variety of link systems are available and no one type will be suitable for every patient in every circumstance.

Suspension Systems

Suspension systems provide a method of holding a body-worn urine collection bag in place under clothing and offer an alternative to leg straps. A variety of designs and sizes are available but most comprise of an arrangement of straps to secure the suspension system to the leg. As an alternative, the patient can try a suspension system that holds the bag on the leg in place, using either a net sleeve (Aquadry) or a sleeve from which the bag can be suspended from the waist.

The majority of manufacturers of urinary drainage bags provide their recommended fixation with the drainage bag, but some can be purchased from the respective company as a separate item to be used with a selection of bags. Choice of suspension systems will depend on the patient's preference as well as careful assessment of the patient's abilities combined with a trial of different types of suspension systems.

Catheter Valves

These devices have not been given an adequate test of time as yet. A catheter valve is connected to the outlet of the catheter allowing the user to empty the bladder when convenient and necessary, thus providing a more discreet alternative to urine drainage bags. Catheter valves do demand a certain amount of manual dexterity and are not suitable for those patients who have lost normal bladder sensation. These valves are not as yet available on prescription.

Literature

Manufacturers produce useful handouts and guidelines for patients and staff on the subject of catheter management, usually free of charge. It is well worth obtaining a supply of these; each product varies in its use.

HAEMATURIA

Investigations

MSU
URINE CYTOLOGY
ULTRASOUND & KUB X RAY
INTRAVENOUS UROGRAM
CYSTOSCOPY

Advice Summary
Patients with haematuria should be referred immediately to the Urology Clinic. It is helpful for any tests to be requested at the same hospital as referral, so that these are available at the first clinic visit, but don't delay referral whilst awaiting these results. Some hospitals offer a haematuria clinic service where initial consultation, cytology, imaging and flexible cystoscopy are achieved during one visit by the patient.

There is a poor correlation between the degree of haematuria and the severity of the underlying disorder. All patients with blood in the urine, whether macroscopic or persistent microscopic, should therefore be fully investigated to establish a cause.
Although there are many non malignant causes of haematuria, painless haematuria is the presenting symptom in 85 - 90% of urothelial tumours, whilst 10% to 15% have frequency and dysuria. Speed of referral and investigation is essential, since the outcome of treatment for invasive bladder tumours depends on the interval between the first symptom and first treatment. All patients are seen urgently, some at special haematuria clinics.

Urine tests

Dipstick testing of the urine is a very sensitive method of detecting haemoglobin in the urine, but the presence of red cells should be confirmed on microscopy. Urinary cytology correlates with the presence of a urothelial tumour in approximately 60%, but there are many false negatives and a negative result should not preclude further investigation. Frankly abnormal cytology sometimes precedes the detection of a transitional cell carcinoma by all other means. Such patients usually develop a demonstrable tumour within a year and need careful follow up with repeated investigations.

Intravenous Urogram

Essential for detail of the upper tract collecting system and ureter to demonstrate urothelial tumours, but many urology and radiology departments now prefer a KUB X-ray, ultrasound and flexible cystoscopy in the first instance. These investigations may point to

areas on which the radiologist can concentrate in the IVU or proceed to C.T.

Ultrasound of the Urinary Tract & KUB X Ray

This is good for the detection of renal parenchyma tumours and larger bladder tumours, but is not suitable for the detection of urothelial tumours of the renal pelvis and ureter. A KUB will demonstrate most stones.

Flexible Cystoscopy

This is performed under local anaesthetic and is now commonly used as the initial diagnostic cystoscopy in order to speed the diagnosis e.g. at the Haematuria Clinic. Patients found to have a bladder tumour can then be given priority admission for resection of their tumour.

In the case of persistent microscopic haematuria, where the IVU and cystoscopy are negative, further investigation for possible glomerular disease is indicated. Attention should be paid to blood pressure, overall renal function, persistent proteinuria and urine microscopy for casts and dysmorphic red cells. Proteinuria in association with microscopic haematuria will direct attention to possible glomerular cause early in the investigation.

HAEMOSPERMIA

Blood in the seminal fluid, with either red or rusty coloured semen is uncommon, but an alarming symptom for the patient. It may occur as a single episode, recur over a period of time or be a persistent feature. It can originate from various sites in the genital tract and, in most cases, the cause is inflammatory and benign - almost invariably so in the under 40's, whilst in the over 40's the occasional malignancy (prostatic carcinoma, tumour at the bladder neck or very rare seminal vesical carcinoma) can present in this way. The approach therefore recommended is:

1. **Under 40s**
   History, full examination including prostate and external genitalia. Investigate with an MSU before and after prostatic massage and with seminal fluid culture. Antibiotic treatment if infection or pyospermia found, using antibiotics which penetrate the prostate gland, such as Trimethoprim, Erythromycin Cephalosporins, or Ciprofloxacin.
2. **Over 40s**

In men over 40, and all ages with persistent haemospermia or associated haematuria, further investigation is indicated, including PSA and transrectal ultrasound to image the prostate and seminal vesicles (with guided biopsy if necessary). Referral to the Urology Clinic is merited for this latter group of patients.

BENIGN ENLARGEMENT AND CARCINOMA OF PROSTATE

1. Benign Prostatic Enlargement (BPE)

Both symptoms and benign enlargement of the prostate (BPE > 20g) are common (43% of men between 60 and 70 years of age - Garraway 1991) the symptoms are not necessarily related to the size of the prostate. The symptoms are not disease specific so PATIENTS REQUIRE OBJECTIVE ASSESSMENT TO ARRIVE AT A DIAGNOSIS AND FORMULATE ADVICE.

It is helpful to screen patients and identify those who require urgent referral. A general assessment, including intercurrent disease, mobility etc, is important, together with a dip-stick urine (with a follow-up MSU to the lab if necessary), abdominal examination, digital rectal examination (DRE) and a serum creatinine to exclude a UTI, chronic retention, obvious carcinoma and renal impairment respectively. WE DO NOT RECOMMEND THE ROUTINE MEASUREMENT OF SERUM PSA. However, patients often know about the test (though not its limitations), so the doctor should have a strategy for advising patients on the pros and cons of PSA testing (see below).

If no urgent reason to refer is found, the patient's symptoms should be assessed in terms of their severity and bother. The key investigation in assessing symptoms is the **Frequency Volume Chart**, which shows up inappropriate drinking patterns, maximal functional capacity of the bladder during the day and night and nocturnal polyuria (over 30% 24-hour urine output during the night hours).

Some hospitals offer a "full package" of initial investigations for males with urinary voiding problems at special flow clinics, and some practices are investing in flowmetry and bladder ultrasound as a primary care facility.

The diagnosis of Benign Prostatic Obstruction (BPO)

In the urology clinic urine flow studies are used to screen patients. If the maximum flow is <10 ml/s there is a 90% chance of prostatic obstruction. For flows >10ml/s, specificity is poor and more than one third of patients are unobstructed.
A rough guide to the likelihood of **bladder outlet obstruction** can be obtained by asking the patient to time voiding using a watch with a second-hand (average flow equals voided volume divided by time taken). The average flow should be assessed from 10 voids.

Average Flow assessed by patient	>8 ml/sec	5 - 8 ml/sec	<5 ml/sec
Maximum flow using flowmeter - 200 ml in bladder to be valid	>15 ml/sec	10 - 15 ml/sec	<10 ml/sec
Percentage with prostatic obstruction	30%	65%	90%

Pressure flow studies will be carried out if the flow rate is > 10 ml/s and interventional surgery is being contemplated.

The Management of BPO
Surgical prostate ablation by TURP or occasionally open prostatectomy is still the gold standard and produces the greatest measurable and long-term reduction in both symptoms and bladder outlet obstruction. Other methods of ablation (laser etc) are under trial. Pharmacotherapy may also improve symptoms by pharmacological action or placebo effect but, with a lesser measurable reduction both in symptoms and in obstruction.

Suggested Plan of Management
Conservative treatment for mild or moderate symptoms.
A period of conservative treatment for three months is advised. This consists of bladder training, advice on fluid intake, pelvic floor exercises, plus or minus an anti-cholinergic drug, if the patient is thought to have detrusor instability (urge, urge incontinence). After discussion and reassurance, many men will adjust to mild or moderate symptoms in the absence of severe obstruction and some will experience spontaneous reduction in symptoms.
If conservative treatment fails and the patient wishes to have further treatment, both drug and surgical therapies should be discussed.

Drug Management
If the patient wishes to try drug therapy, an alpha-blocker is the first choice since its effect, if any, is immediate, but take care with the elderly and those on anti-hypertensives (hypotension and dizziness). Flow rates and post-void residuals should be re-measured at one month.

5-Alpha Reductase Inhibitors shrink only the epithelial part (25%) of the gland and take at least 6 months to achieve maximum affect. PSA MUST BE CHECKED PRIOR TO TREATMENT. (Note that they can also reduce serum PSA by half in benign and malignant prostate enlargement so if you have reason to check PSA in 5-alpha reductase treated patients, multiply the result by 2).

Check flow rates and post void residuals at 6 months and do not continue the therapy in the absence of significant subjective and objective benefit. These drugs are still on long-term trial and have, so far, been found to benefit a minority of men.

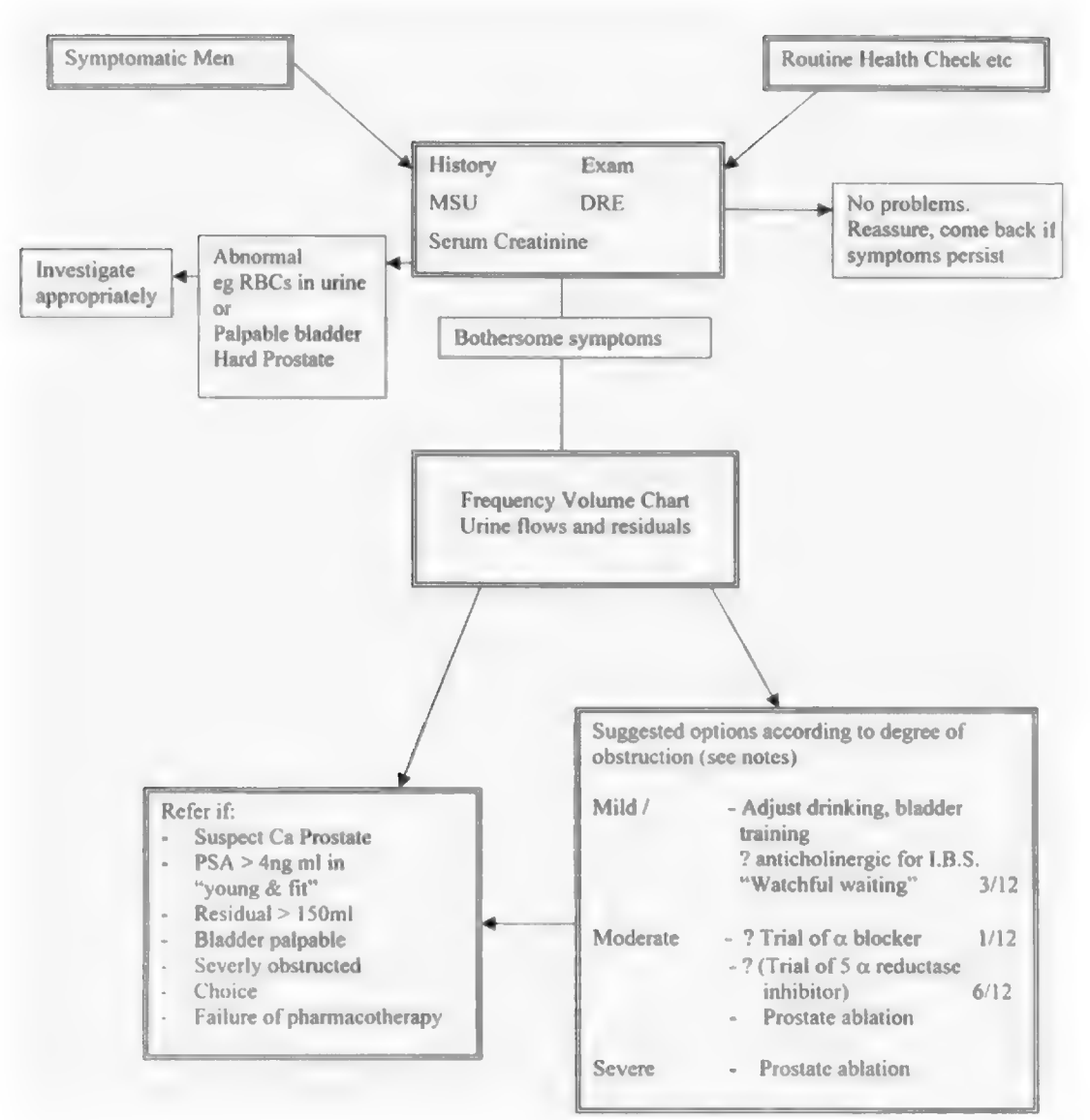
If drug therapy fails, or is not chosen, and the patient is sufficiently bothered, he should be referred for evaluation with a view to surgery.

Surgical Treatment for Persistent Moderate or Severe Symptoms

If symptoms persist and are troublesome, refer for evaluation for possible TURP or alternative prostate ablation. Symptomatic patients will have FR assessed and pressure-flow studies performed if necessary.

- Acute retention: If not referred to hospital initially, catheterisation at home and the arrangement for an urgent outpatient appointment is recommended. If the residual urine on catheterisation is > 1500ml, we would recommend immediate admission to hospital, since some of these patients will have impaired renal function and the subsequent diuresis may cause further complications of electrolyte balance.
- Chronic retention : If urea and electrolytes are within normal limits there is no need to catheterise immediately, but early referral is recommended.

SYMPTOMS SUGGESTIVE OF PROSTATIC OBSTRUCTION



2. Diagnosis of Carcinoma of Prostate

Serum PSA - (normal up 4 ng/ ml in the under 60s and up to 6ng/ ml in the elderly)

THIS IS NOT A SPECIFIC TEST FOR PROSTATE CANCER but can be a pointer to the diagnosis and a rough staging guide after tissue diagnosis. It is a very useful monitor of treatment effectiveness, except for a minority of poorly differentiated tumours which may express PSA only at low levels. A PSA within the normal range for the majority of men does not exclude CaP.

WE RECOMMEND CHECKING SERUM PSA IN SYMPTOMATIC MEN ONLY ON CLINICAL SUSPICION OF PROSTATE CANCER, ie rapid progression of lower urinary tract symptoms (LUTS) in the absence of infection, suspect DRE – hard prostate/nodules/irregular shape, associated skeletal pain, family history.

WE DO NOT ADVISE ROUTINE POPULATION SCREENING as there are still uncertainties about management. A patient with or without LUTS requesting PSA should be fully informed about the interpretation and implications of the results before measurement. Many patients with lower abnormal results (between 4 and 20 ng/ml) will simply have benign disease - high results can occur in prostatitis. The diagnosis of CaP and its grade are made by transrectal ultrasound guided biopsies.

The Treatment of CaP
Localised Disease
Localised prostatic carcinoma diagnosed in men over 70 need not be a threat. 80% of such patients ultimately die of other causes (Johanson), but younger men and fit men in their 70s, with a life expectancy of > 10 years, risk life-threatening progression and may be suitable for, and wish to have, radical surgery. The treatment may therefore be selective, depending on age, intercurrent conditions and histological grading. Generally, in patients with a life expectancy of >10 years, our current recommendations for localised disease confirmed by careful staging procedures are :

- Well differentiated tumour: monitor PSA and DRE at 6 month intervals.
- Average differentiation : discuss and offer radical prostatectomy, if appropriate.
- Poor differentiation: micro-metastases may have already occurred and results of surgery may not be good. Radical radiotherapy is an alternative treatment. However, in such patients, all three options, watchful waiting, radical surgery or radiotherapy should be discussed.

Locally Advanced or Disseminated Disease

- In asymptomatic disseminated disease, hormonal treatment may be delayed without affecting longevity, but it is probable that tumour associated morbidity is less when hormonal treatment is initiated early.
- Patients with symptoms should be treated and extreme care should be taken in patients who develop back pain, since a small minority may develop cord compression leading to paraplegia. Long bones are also at risk from pathological fracture. A bone scan should be carried out on those in whom metastases are suspected.
- Two-thirds of patients will respond to hormone manipulation and the methods of manipulation should be discussed with the patient, ie surgical castration (bilateral orchidectomy), or medical castration.
- LHRH analogues are the best method of medical castration and a variety are now available. Since initial treatment causes

increased testosterone levels associated with symptom flare, the patient should be started on Cyproterone Acetate three days before the first LHRH depot injection and continued on this for three weeks (300mg daily).Higher doses may lead to serious hepatic reactions. CPA may also be used as the treatment for hot flushes after orchidectomy or LHRH agonists (100mg daily) and in patients who have not responded to, or are intolerant of, other treatments (300mg daily). Liver function tests before and after treatment is initiated or when symptoms or signs suggestive of hepatic impairment develop are recommended.

- Monotherapy with Anti-androgens and combined treatment (total androgen blockade) are under investigation at present and are likely to be initiated from secondary care.
- Local radiotherapy to painful and otherwise unresponsive metastases is usually very helpful.

Please refer urgently to urology any man with prostate cancer who develops the following : - anuria, oliguria, renal failure (suspected ureteric obstruction), bilateral lower limb / bladder motor or sensory loss (suspected cord compression).

A rough guide to staging of histologically proven prostate cancer with PSA is as follows :

PSA < 20 ng/ml - Distant metastases rare
PSA > 40 ng/ml - Local invasion and/or lymph node metastases common
PSA > 100 ng/ml - Bone metastases likely

Poorly differentiated tumours can be under staged since they may express PSA poorly.

SCROTAL SWELLINGS

Referral advised. Most scrotal swellings are benign and the commonest - epididymal cysts and hydroceles do not all need surgery. Young men are currently much more aware of testicular cancer and the emphasis in investigation now is :-

1. **To exclude cancer.**
2. **To define the pathology.**

History of trauma and previous surgery, including vasectomy, is important. Post-vasectomy patients may complain of pain and swelling (usually epididymal) often years after the operation. Testicular tumours are largely found in the under 50s.

Scrotal ultrasound is much more accurate than clinical examination in defining tumours and other pathologies. It is also of therapeutic value in reassuring many, so is now commonly used.
Any patient with a suspected testicular tumour is seen urgently.

INDICATIONS FOR SCROTAL ULTRASOUND

- Intra-testicular lump
- When unable to distinguish whether lump is intra- or extra-testicular
- Painful scrotal conditions
- Impalpable testicle within hydrocoele of recent onset
- Post traumatic testicle - ? rupture / haematoma
- Malignancy suspected in palpably normal testicle

Scrotal ultrasound is NOT indicated when

- Lump is clinically extra-testicular and testicle is normal

IMPOTENCE

Regular specifically designated outpatient sessions for the further investigation and treatment of male erectile dysfunction are held in the Urology Outpatient Clinic at Southmead Hospital. They are staffed by a consultant, a senior urological trainee, a research fellow, a general practitioner (2 sessions/week) and an andrology nurse specialist. No special investigations are required before referral but a comprehensive list of any medication is helpful.

Patients with cardiovascular disease, often taking beta blockers and/or thiazide diuretics are the commonest organic group, followed by diabetics. After taking a history and physical examination the patient's response to the intra-corporeal injection of a vaso active agent - papaverine, prostaglandin E1 or moxisylyte (Erecnos) - is assessed. If an erection is produced then the patient is offered tuition in self injection, or the intraurethral delivery system, MUSE, is considered as an option. If response is poor then vacuum constriction devices are discussed. Should these subsequently be tried and found unsatisfactory, then penile prostheses are considered. The younger non-responders who have no obvious underlying contributory causes are further investigated with colour Doppler duplex ultrasound scanning of the penile arteries, followed by dynamic pharmaco-cavernosometry. These investigations identify patients who may benefit from penile revascularisation or 'venous leak' surgery. Patients with Peyronie's Disease are also seen in these clinics.

INFERTILITY

A male infertility clinic is held on alternate weeks at Southmead Hospital Urology Outpatient Clinic. Most patients are referred from gynaecologists or female infertility clinics when, during the course of investigation, the male partner is found to have either azoospermia or oligospermia. A photocopy of any semen analyses accompanying a request for a patient to be seen is essential. If details of a hormone profile, i.e. plasma testosterone, LH and FSH, are included then this is useful information which can streamline investigation and treatment. There is an AID and AIH programme, but the waiting list in considerable.

VASECTOMY REVERSAL

Although vasectomy reversal is available under the NHS in exceptional circumstances, the priority given to it is necessarily low. Operating time is valuable and reversal takes between one to one and a half hours to perform. Although it is almost always possible from a technical point of view to reverse a previous vasectomy, sperm may not appear in the ejaculate. The quality of sperm usually declines with the interval between vasectomy and its reversal and pregnancies are not often achieved after a time span of more than 10 years between vasectomy and reversal. Whatever the odds given to a couple against success in terms of achieving a pregnancy most are not dissuaded from surgery. Micro aspiration of seminal fluid from the epididymis and testis for assisted conception techniques is currently undertaken in the University Division of Obstetrics and Gynaecology Bristol.

PAEDIATRIC UROLOGY SECTION

URINARY TRACT INFECTIONS
UNDESCENDED TESTIS
PHIMOSIS
ENURESIS

PAEDIATRIC URINARY TRACT INFECTIONS

Urinary tract infections occur most commonly in young girls and are often of no great significance. They are best referred to one of the Paediatricians initially who will carry out routine investigations and will refer on any patients who have a surgical problem. Initial investigations include a plain X-ray of the abdomen and an ultrasound of the kidneys, ureters and bladder. Further investigations are only undertaken if the ultrasound is abnormal. Patients with recurrent infections will require a micturating

cystourethrogram but, since this is such an unpleasant investigation in children, use is strictly limited.
In young girls with recurrent infections, daytime urgency and wetting is not infrequently associated due to bladder instability. These patients will require treatment for instability when the wetting becomes socially unacceptable.

PAEDIATRIC UNDESCENDED TESTIS

The presence of an undescended testis should be picked up on the routine postnatal examination. Children should be referred for an opinion at approximately six weeks of age so that examination may be undertaken before the cremasteric reflex becomes active. Re-examination is undertaken at nine months of age and, if the testis remains undescended, surgery is normally undertaken between the ages of one and two years.

PAEDIATRIC PHIMOSIS

The foreskin, at birth, is normally adherent to the glans and is not retractile. As the child grows older, the prepuce would normally become more retractile, but the age at which this occurs is very variable. Not infrequently, children under the age of four will get recurrent bouts of balanitis which is symptomatically uncomfortable, but of no lasting harm. The foreskin is often normal and this is not an indication for circumcision. Patients rarely have a true phimosis under the age of four, and, with gentle manipulation, the foreskin can normally be partially retracted. If there is no evidence of the foreskin becoming retractile, the child should be referred for an outpatient opinion. The commonest indication for circumcision is balanitis xerotica obliterans affecting the foreskin in the older age group. Many patients have retractile foreskins but underlying preputial adhesions and, if by the age of eight or nine these preputial adhesions are still present, they can be freed by instilling Emla local anaesthetic cream under the foreskin for an hour. The adhesions may then be freed.

ENURESIS

Enuresis is rarely a surgical problem and should be referred to an appropriate enuretic clinic. If there is a particular concern that the patient's enuresis is secondary to another abnormality, a referral should then be undertaken, but such an underlying pathology is extremely rare.

HYDROCELE / PATENT PROCESSUS

Surgery normally advised at the age of 2 years.